SUBMISSION BY OIL & GAS UK

Introduction
Oil & Gas UK is the principal trade association representing the offshore oil and gas exploration and production (E&P) industry within the United Kingdom, with more than 200 members ranging from the largest, integrated oil and gas companies through independent E&P operators to an extensive supply chain, much of it in Scotland. It is a major employer offering highly skilled and high value-adding jobs, an extensive range of technologies and substantial exports of goods and services.

The industry has consistently been the largest investor among the UK’s industrial sectors over the past 30 years, with some £8.5 billion of capital spent in 2011 and more than £11 billion forecast to be spent in 2012 (ref our recently published annual Activity Survey). The industry currently supports about 440,000 jobs across the economy through its activities on the UK’s continental shelf (UKCS) and in the export of oil and gas goods and services to various parts of the world which are estimated to be worth more than £5 billion a year. Some 45% of these jobs are concentrated in Scotland; more details about exports of oilfield goods and services by businesses in Scotland are available from a report by Scottish Council for Development and Industry, highlights of which are on page 50 of Oil & Gas UK’s Economic Report for 2011.

Currently, oil and gas comprise 75% of the country’s primary energy supplies and this is forecast to decline only slowly during the next 20 years, e.g. to about 70% in 2020 (ref DECC). While UKCS production accounted for some 75% of that oil and gas requirement in 2010, it will continue to decline (it peaked in 1999 for oil and 2000 for gas). With the right investment climate, we expect that it could still satisfy some 60% of our oil and gas demand in 2020 and that we will continue producing some oil and gas well into the 2040s and even beyond 2050. It is forecast that there remain between 14 and 24 billion barrels of oil equivalent to be recovered and, given the continued dependence on oil and gas as essential sources of energy for many years to come, we believe that the UKCS has the potential to be a major contributor to the future security of energy supplies in both Scotland and the rest of the United Kingdom.

It is also worth noting that long established policy, agreed between government and the industry, has been that the United Kingdom should recover as much of its oil and gas resources from the UKCS as it economically can. A necessary part of achieving this desirable goal is that there should be fiscal and regulatory predictability, although we fully recognise that this is a reserved matter.

From the EU downwards, government has three over-arching policy objectives: reduced emissions of greenhouse gases (GHGs), security of energy supplies and affordability. We fully support governments’ desire to reduce emissions of GHGs in economically efficient ways and to encourage investment that will achieve this objective, coupled with securing energy supplies in a manner which is both affordable for consumers and keeps the economy competitive. We also understand

2 http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EC026.pdf
the desire to end some of the investment uncertainties which are currently evident in
the electricity generating market, in particular.

Oil & Gas UK therefore has pleasure in responding to this inquiry and so we now
turn to the Committee’s more specific questions.

**Targets**
There are considerable risks in having multiple targets, for example the EU’s well
known 20% reduction in emissions plus 20% renewable energy plus 20% gain in
energy efficiency, all by 2020. We would argue that the first 20% is the one which
matters; the other two are, in reality, means of achieving the first one, but they are
not necessarily the only means, nor are they necessarily the most efficient means.

We therefore question the wisdom of setting multiple such targets. It would be much
better to set an overall objective rather than specify individual, technology related
targets. In this way, the most efficient results will be secured through the normal
mechanisms of discovery and choice.

i) **Electricity.**
It is very difficult to see how 100% of electricity from renewable sources will occur by
2020 in Scotland. The principal technology for achieving this will be wind power
which, because of its intermittency, implies that Scotland will have to generate
electricity from wind in excess of its own requirements for much of the time and
export the surplus to England. However, the annual load factor for wind power is
typically 30%, maximum 35%, hence the difficulty in envisaging how 100% renewable electricity will be delivered by the end of this decade. It will require an
exceptionally high rate of investment in both renewable generating capacity and
expanding the grid southwards.

As with the UK wide target of 15% of all energy coming from renewable sources by
2020, Scotland’s target for 100% of electricity from renewables looks more likely to
be for 2030 than 2020, by which time tidal and wave power could be beginning to
make a material contribution.

ii) **Heat.**
About 80% of houses are heated by gas, as are most commercial and public
premises. Modern gas heating at the point of use is very efficient and generally
cheaper than any other form of heating, whereas renewable heating tends to be
much more expensive. For example, heat pumps are most applicable in well
insulated property and are only likely to benefit existing homes heated by oil or
electricity, not gas, according to a report by the Energy Savings Trust in September
2010. This found that the pay-back periods for ground and air source heat pumps were:

<table>
<thead>
<tr>
<th>Heat source:</th>
<th>ground</th>
<th>air</th>
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<tr>
<td>v electricity</td>
<td>18 years</td>
<td>10 years</td>
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<tr>
<td>v new oil</td>
<td>29</td>
<td>16</td>
</tr>
<tr>
<td>v new gas</td>
<td>47</td>
<td>31</td>
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Furthermore, air source heat pumps which are more easily applicable to existing housing need to be backed up by electricity in cold weather. In an analysis of the winter of 2009-10 and the start of winter 2010-11, Oil & Gas UK calculated that, if the heat provided by gas in very cold weather were instead satisfied by electricity, GB’s electricity system would need to be four times its present size. It is not often appreciated how large the gas system of this country is.

In terms of reducing emissions of GHGs relating to heating, switching to modern, very high efficiency gas boilers is among the fastest and cheapest way to do this, the supply chain for which already exists. This should form part of a well targeted programme of energy efficiency improvements in buildings, public and private.

**Challenges**

As we have written before with regard to the whole UK, it is now clear that current policies which aim to de-carbonise electricity generation by 2030 and electrify the economy are going to be very expensive. Also, it is doubtful if the necessary capital can be raised within the timeframe contemplated, never mind spent to good effect without straining the supply chain’s resources such that it leads to significant cost inflation which would be the worst of all outcomes.³

i) **Technology.**

Current policies assume the simultaneous and successful introduction of a wide range of new technologies and changes in the way we live:

- 12-15GW of new nuclear power plant (not currently applicable in Scotland)
- CCS becoming commercial
- offshore wind power of a scale, complexity and distance from shore never undertaken before
- development of a smart and much expanded electricity grid (for Scotland this is crucial)
- widespread introduction and use of electric vehicles
- electrifying home heating (80% of homes currently use gas)
- introduction of smart metering across the country
- dramatic improvements in energy efficiency and the way society uses energy.

There are, therefore, very considerable financial and practical risks with today’s policies. The probability of so many new technologies and such profound changes all coming to fruition within the same, comparatively short timeframe and at an affordable cost is likely to be extremely small.

We have, therefore, attempted to assess the risks posed by the eight major changes in technology and way of living, listed above (with the fourth risk re the electricity grid split into two: a smart grid and a much expanded grid).

³ As we pointed out in our response in March 2011 to DECC’s consultation about Electricity Market Reform, it is worth noting that the much quoted £200 billion of energy infrastructure investment during 2010-20 excludes our sector, offshore oil and gas, where £60-70 billion of capital investment is expected during the decade.
This simple analysis indicates that, on a ten point scale of increasing risk from 0 to 9, all of these changes except one fall into the top half of the range, with two scoring 8, one 7, two 6 and three 5, leaving only one in the bottom half, scoring 3 (ref Oil & Gas UK’s Economic Report 2011).

### ii) Supply Chain.

The last time that the energy infrastructure was rebuilt and expanded to this extent was in the 1960s and 1970s. After that, the need to invest diminished considerably, with the major exception of offshore oil and gas. In the 1960s-70s, the indigenous supply chain for such investment was much larger than it is today. Importantly also, the supply chain within Scotland does not sit in isolation, but is part of a much wider UK and European-cum-international supply chain. In the case of offshore oil and gas, this effect is worldwide, albeit with centres of particular expertise, such as Aberdeen for subsea engineering.

All this means that the supply chain for delivering the investment to meet Scotland’s and the rest of the UK’s renewable energy targets will need to be expanded substantially. Furthermore, the offshore oil and gas industry is unlikely to have surplus capacity which will come free for these purposes during the current decade. On the contrary, our industry’s anticipated investment programme is more likely to mean that we will continue recruiting and training significant numbers of new people in all categories of skill for our own purposes.

Nonetheless, Scotland has demonstrated in offshore oil and gas how a new supply chain of world class standards can be developed; Aberdeen as a centre of expertise is unquestionable. But, it has taken four decades to achieve and some £300 billion (in 2010 money) of total capital investment in the UK’s offshore oil and gas sector. Therefore, a supply chain to achieve Scotland’s 2020 targets for renewable heat and electricity will not only need considerable expansion, but it will take time, money and patience if inflationary pressures are to be avoided.

Regarding the Scottish government’s role, we re-iterate the point that the various parts of the UK do not operate in isolation, anymore than the parts of Europe can. The supply chain is international, far more so than in the 1960s-70s, and so we see a need for governments to co-operate with one another, while managing their own particular circumstances. It is worth noting that, according to the European Commission, the EU figure which is equivalent to the £200 billion of investment in the UK mentioned in footnote one above is no less than €1 trillion.
iii) Finance: investment of £200 billion in the UK and €1 trillion across the EU. By any standards, these are immense amounts of capital. Ever since the figure of £200 billion first emerged (originally £234 bn in summer 2008, reduced to £200 bn early in 2009 – ref Enrst & Young), we have held substantial doubts about the ability of the utilities and infrastructure investors to raise these sums. We are not alone in this view.

This has echoes in our own industry; small and medium sized companies, both oil and gas operators-investors and supply chain, are having difficulties raising funds (equity and debt) and this has implications for growing the supply chain and developing new technologies. This will not only affect the achievement of Scotland’s renewable energy targets, but also the recovery of oil and gas from the UKCS, together with all the revenue, jobs, tax and exports which will result.

The Scottish government should ensure that, in its desire to influence the development of renewable energy, it does not overlook the major contribution to prosperity being provided by an industry which can reasonably claim to be Scotland’s greatest post-war industrial success story. For example, we would hope that small businesses with identified growth potential within the oil and gas supply chain will continue to benefit from initiatives such as the Scottish Loan Fund.

iv) Skills and Workforce Development. There is much to be done here, as indicated above, and the offshore oil and gas industry is working with its skills and training academy, OPITO, and, through OPITO, the Engineering Construction Industry Training Board to develop the workforce and enhance skills throughout the industry. In addition, the number of graduate trainees is being increased, particularly in engineering disciplines.

The downturn in other parts of the economy is making careers in the energy industries more attractive than was the case a few years ago. Nonetheless, there is a formidable challenge for every energy related business and we should all strive to avoid an unproductive competition for valuable human resources.

v) Energy Market Reforms. In our response almost 12 months ago to DECC’s consultation about reforming the electricity market, we wrote this:

“The picture has also become clouded by the number of initiatives and instruments which have been introduced in recent years or are under consideration: CCL/CCAs, EU ETS, ROCs and CRC EES in the former category and the RHI, a carbon price floor and these proposed measures [FiTs with CfDs, emissions performance standards and a capacity mechanism] in the latter. The coherence of all of these measures has to be questionable.

“Taken together, they represent a substantial shift away from allowing markets to work, with all of the benefits which have accrued over the past 20

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4 CCL/CCAs = Climate Change Levy/Climate Change Agreements; EU ETS = EU Emissions Trading System; ROCs = Renewable Obligation Certificates; CRC EES = CRC Energy Efficiency Scheme; RHI = Renewable Heat Incentive; FiTs = Feed-in Tariffs; CfDs = Contracts for Difference.
years in Great Britain, towards much more intervention by government. Indeed, after the application of the various measures proposed, it is difficult to see how much of a market in electricity will be left to be contested in a normal, competitive way and, therefore, how the electricity market will function or how a reliable price for electricity will be set in future. Together with the intermittent nature of wind power, it is therefore highly likely that wholesale electricity prices will become much more volatile than currently.

“We would encourage DECC to concentrate on simplification where ever possible. There is a material risk that the complexities of having so many measures and instruments will become unmanageable and counter productive. A price for CO\textsubscript{2} is becoming less and less likely to emerge through normal market mechanisms, with the risk that this in turn will encourage ever more governmental intervention and the creation of more instruments to deal with the next perceived failure.”

Much research into increasing reliance on intermittent means of generating electricity has been undertaken by various consultants and academic bodies. Poyry Management Consulting of Oxford has conducted extensive analytical studies of the consequences for both electricity and gas and, as a result, Poyry produced an article summarising the position for electricity under the title “Winds of change: the challenges of intermittency in European energy markets” which was published on pages 24-27 of Oil & Gas UK’s Economic Report, 2011\textsuperscript{5}.

But, it remains to be seen how a carbon floor price, FiTs with CfDs and a capacity mechanism will work in practice in the electricity market. What is clear is that the whole of GB will need to invest in large amounts of new generating capacity, not only to meet the ambitious targets for renewable energy, but also to maintain continuity of supply. The scale of existing generating capacity – oil, coal and nuclear – which will have to be replaced by the mid-2020s on account of old age and emissions’ limits (about 40GW in total) will inevitably mean that large amounts of new gas fired plant will be required, gas being the only technology available, at such scale and within this timeframe, which can deliver power reliably and so keep the lights on.

Conclusions

- Oil & Gas UK believes that meeting Scotland’s renewable electricity target poses considerable difficulties, especially within the timeframe envisaged.
- It is essential that the Scottish Government recognises that Scotland will, for some decades to come, continue to depend upon oil and gas to meet its energy needs and that this should be reflected in the government’s policies.

Oil & Gas UK
29 February 2012

\textsuperscript{5} http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EC026.pdf